Up To Date

NASA's Independent Verification &Validation Program
Educator Resource Center Newsletter
Fairmont, West Virginia

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NASA Mission Updates from nasa.gov

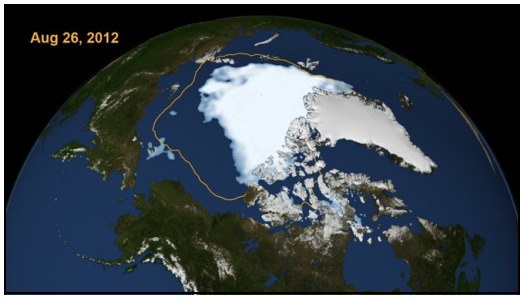
Curiosity Begins Exploring Mars

NASA's Mars rover Curiosity has set off from its landing vicinity on a trek to a science destination about a quarter mile (400 meters) away, where it may begin using its drill.
The rover drove eastward about 52 feet (16 meters) on Tuesday, its 22nd Martian day after landing. This third drive was longer than Curiosity's first two drives combined. The previous drives tested the mobility system and positioned the rover to examine an area scoured by exhaust from one of the Mars Science Laboratory spacecraft engines that placed the rover on the ground.
"This drive really begins our journey toward the first major driving destination, Glenelg, and it's nice to see some Martian soil on our wheels," said mission manager Arthur Amador of NASA's Jet Propulsion Laboratory in Pasadena, Calif. "The drive went beautifully, just as our rover planners designed it."
Glenelg is a location where three types of terrain intersect. Curiosity's science team chose it as a likely place to find a first rock target for drilling and analysis.

Curiosity is three weeks into a two-year prime mission on Mars. It will use 10 science instruments to assess whether the selected study area ever has offered environmental conditions favorable for microbial life. JPL, a division of Caltech, manages the mission for NASA's Science Mission Directorate in Washington

Artic Sea Ice

This visualization shows the extent of Arctic sea ice on Aug. 26, 2012, the day the sea ice dipped to its smallest extent ever recorded in more than three decades of satellite measurements, according to scientists from NASA and the National Snow and Ice Data Center. The data is from the U.S. Defense Meteorological Satellite Program's Special Sensor Microwave/Imager. The line on the image shows the average minimum extent from the period covering 1979-2010, as measured by satellites. Every summer the Arctic ice cap melts down to what scientists call its "minimum" before colder weather builds the ice cover back up. The size of this minimum remains in a long-term decline. The extent on Aug. 26. 2012 broke the



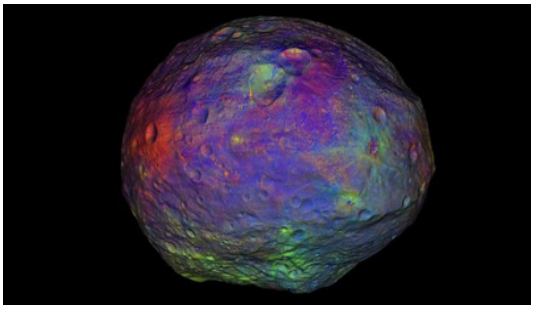
previous record set on Sept. 18, 2007. But the 2012 melt season could still continue for several weeks. Image credit: Scientific Visualization Studio, NASA Goddard Space Flight Center
The new record was reached before the end of the melt season in the Arctic, which usually takes place in mid- to late-September. Scientists expect to see an even larger loss of sea ice in the coming weeks.

Dawn Leaves Vesta, Heads to Ceres

NASA's Dawn spacecraft is on track to become the first probe to orbit and study two distant solar system destinations, to help scientists answer questions about the formation of our solar system.

The spacecraft is scheduled to leave the giant asteroid Vesta on Sept. 5 EDT to start its two-and-a-half-year journey to the dwarf planet Ceres.

The colors below were chosen to highlight differences in surface composition that are too subtle for the human eye to see. Scientists are still analyzing what some of the colors mean for the composition of the surface. But it is clear that the orange material thrown out from some impact craters is different from the surrounding surface material. Green shows the relative abundance of iron. Parts of the huge impact basin known as Rheasilvia in Vesta's southern hemisphere, for instance, have areas with less iron than nearby areas.



Students Use WeDo Robotics in Summer Camp

Connie Skomra, a financial advisor with her own company, and a member of a Parkersburg area home school group, led robotics activities at a summer program for the students. Using the ERC's Robotic Explorations and LEGO WeDo's Kit students explored the concepts of what is and isn't a robot, how NASA uses robots in the space program, how robots are programmed and remotely controlled, and how to build a variety of "robotic" animals and other tools.

Top: Students exploring the use of robotic arms.
Center: A spinning top is created to explore the use of gears in robotic builds.
Below: Laptops in the kit contain the software to program the robots.

New Student Programs Assistant Makes 2012 Student Workshop Schedule Available

Teri Foster has joined the ERC staff as the graduate assistant for student programs. Teri has a BA in Elementary Education for grades K-6 with a Mathematics grades 5-9 specialization from FSU. She is currently enrolled as a graduate student at FSU where she is working towards her masters' in Education with a concentration in reading.

Teri Foster, FSU grad student, is the new Graduate Assistant for Student Programs

Teri will be scheduling student workshops at the ERC. These four hour workshops are designed for a classroom teacher or informal educator to bring up to eighteen students to NASA IV&V to explore a particular STEM topic.

The following student workshops are scheduled for this school year:

Model Rocketry: Building and launching model rockets that use solid fuel engines on Sept. 18th , Sept. 25, Oct.2, and Oct. 9

Planetary Geology, focusing on Mars and the Curiosity rover on Oct. 23, Oct. 30, Nov. 6, and Nov. 13.

NXT Robotics: Using proportional math to program robots to perform a variety of tasks on Jan. 15, Jan. 22, Jan. 29, and Feb. 5

Living and Working in Space: Discovering the challenges of living off Earth on Feb. 19, Feb. 26, Mar. 5, and Mar. 19

Aviation: Learning the principles of flight with remote controlled airplanes on April 2, April 9, April 16, and April 23

To schedule a workshop please email or call Teri at

teri.foster@ivv.nasa.gov 304-367-8379

Year of the Solar System Continues- October 2010-August 2012 (and beyond): A Martian Year of the Solar System!

The Year of the Solar System (YSS) offers ways for you to get involved with NASA's amazing science discoveries!

As NASA spacecraft head to and arrive at key locations, YSS and the continuing salute to the 50 year history of solar system exploration provide an integrated picture of our new understanding of the solar system to educators and the general public!

YSS combines the amazing discoveries of past NASA planetary missions with the most recent findings of the ongoing missions, and connects them to the related planetary science topics!

On the YSS website find valuable hands-on science activities, resources and educational materials to engage students, families and the general public in planetary science topics and their related mission discoveries. This journey of discovery continues with the anniversary of 50 years of NASA Solar System exploration!

What's a Martian Year?

A Martian year is the amount of time it takes for Mars to make one complete orbit around the sun -- 687 Earth days. It takes Earth about 365 -- Earth days to complete its annual journey around the sun. The reason it takes Mars longer is that it is farther from the sun and travels more slowly.
And why are we using Earth days as a measurement? Each planet spins on its axis at a different rate. So a day (sunrise to sunrise or sunset to sunset) on each planet is different.

WHY a Martian Year for the Year of the Solar System?

We had so many mission milestones and exciting research discoveries to celebrate, that an Earth year just wasn't long enough!

For many activities and background material visit the Year of the Solar System website at:

http://solarsystem.nasa.gov/yss/about.cfm

Get Social with YSS

YSS is online in many places! Be sure to follow YSS announcements and happenings:

Facebook: Our Solar System - http://www.facebook.com/pages/Our-Solar-System/79209882917

YouTube: NASASolarSystem - http://www.youtube.com/user/NASASolarSystem

Twitter: Our Solar System - http://twitter.com/OurSolarSystem#

Add #nasayss to your YSS tweets!

Flickr: Our Solar System - http://www.flickr.com/photos/oursolarsystem

Look At What's Been Happening This Summer!

- The Dawn Spacecraft has finished imaging the asteroid Vesta and is heading for the dwarf planet Ceres.
- The Mars Science Laboratory rover Curiosity has landed on Mars and began exploring the Gale Crater.
- LRO (Lunar Reconnaissance Orbiter) revealed in photos flags are still on the moon
- The Cassini spacecraft spotted daytime lightning in Saturn's atmosphere and also showed why jet streams crosscut Saturn.
- The Hubble Space Telescope discovered another moon revolving around Pluto. That makes five for the dwarf planet!
- The Messenger spacecraft captured its 100,000 image from its orbit around Mercury.
- Voyager 1 reached the final frontier of the Solar System.
- SDO (Solar Dynamic Observatory) captured awesome photos of the Transit of Venus and at several times during the summer beautiful photos of coronal mass ejections and solar flares.
- Students who have used Moonkam reported their findings in Washington D.C. at headquarters. Go to the Moonkam website to see how your students can participate: https://moonkam.ucsd.edu

How the ERC can help with Solar System content:

- Become trained to use the solar system and moon cylinders with STARLAB
- Become trained to use the Planetary Geology kit
- Become trained to use the Space Weather Kit
- Become certified to borrow Lunar and Meteorite samples from Johnson Space Center
- Stop by the ERC and pick up posters and bookmarks

Note: Article material copied from the YSS website and edited by Pam Casto

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Upcoming Events:

Sept. 9 Hasta la Vesta (online info at http://dawn.jpl.nasa.gov/news/hasta_la_vesta.asp)

Sept. 18 Student Rocketry workshop at ERC

Sept. 20 Robots and Ratios at Bridgemont Community College

Sept. 22 International Observe the Moon Night with telescope workshop 6-9 pm at ERC

Sept. 25 Student Rocketry workshop at ERC

Oct. 2 Student Rocketry workshop at ERC

Oct . 9 Student Rocketry workshop at ERC

Links to Student Competitions

First Lego League Robotics:

http://www.firstlegoleague.org/

Real World Design Challenge:

http://www.realworlddesignchallenge.org/

Team America Rocketry Challenge:

http://rocketcontest.org/

Green Aviation Contests:

http://aero.larc.nasa.gov/competitions.htm

Quotes of the Month: *Education*

"Do not train a child to learn by force or harshness; but direct them to it by what amuses their minds, so that you may be better able to discover with accuracy the peculiar bent of the genius of each." ***Plato***

"Education is the most powerful weapon which you can use to change the world." ***Nelson Mandela***

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Where in WV is the ERC?

July-August Workshops in Red

July-August Equipment Loans in Blue

To schedule a workshop:

Contact the ERC by calling 304-367-8436 or emailing:

pamela.casto@ivv.nasa.gov

To schedule equipment for loan: First check the equipment loan calendar on the ERC website to see if the equipment is available for the dates desired. Then email Nicole Culp who will schedule the dates.

nicole.culp@ivv.nasa.gov

Check us out on Facebook:

NASA IV&V Facility Educator Resource Center